Federation Overview

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MODIS Science Team Meeting
by

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NRC's Recommendations

- **The NRC Board on Sustainable Development and the Committee on reviewed EOSDIS as part of their overall review of the USGCRP and NASA MTPE. There were two key recommendations for EOSDIS.**
  - **"The components of the EOSDIS now under development for flight control, data downlink, and initial processing should be retained, but streamlined."**
  - **"Responsibility for product generation, publication, and user services should be transferred to a federation of partners selected through a competitive process open to all."**

Proposed Approach to Federation

Goals:

1) Aggressively, but prudently respond to BSD/CGCR advice
    a) compete
    b) federate
    c) prototype
    d) be realistic
2) Meet NASA goals
    a) reduce routine operations
    b) infuse new technology for cost advantage
    c) meet mission commitments

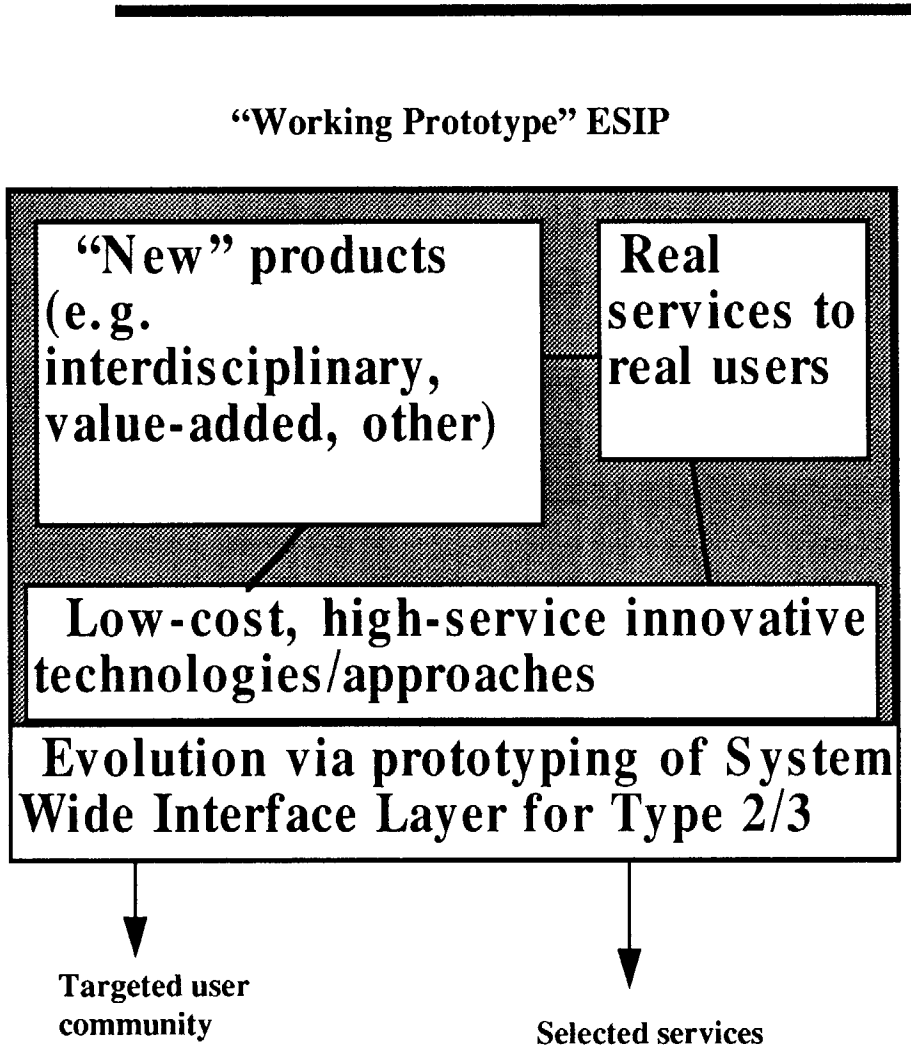
Approach:
Develop Federation in Phases

- **Phase I - Immediately form "working prototype federation" and use as a vehicle to achieve the following goals:**
  - Conduct up-front prototyping
  - Educate and prepare the broader community for federation implementation
  - Define governance and allocation of powers
  - Jointly define with the community initial System Wide Interface Layer
  - Aggressively pursue cost efficiencies to enable flexibility in expansion of federation
- **Phase II - Using results of Phase I, form full federation under which EOSDIS will operate into the future. Achieve the following goals:**
  - Hold competition for new products services tied to major mission "eras"
  - Educate and prepare broader community for subsequent federation competitions
  - Support federation expansion despite budget caps or reductions
- **Both Phases must support on-going efforts to:**
  - Extend and add services for scientists
  - Introduce flexibility to allow scientists to add products
  - Support Outreach for GCDIS & International Efforts
  - Meet NASA mission commitments

Phase I: Exploratory Phase Actions

- **Begin up-front prototype and federate governance**
  - **Form "baseline" federation for AM/PM ['96]**
    - Continue ECS/DAACs but change governance
  - **Compete and form Type 2/3 "working prototype" federation ['96/'97 - '00]**
    - Compete for Type 2/3 "Working Prototype" Earth Science Information Partners (WP-ESIPs) as members of "learn by doing" participatory federation
      - First competition in '96/'97 to acquire Type 2 & 3 "working prototype" ESIPs (WP-ESIPs) to "seed" the community in preparation to full competition. Three year award.
      - Develop and operate systems in parallel to baseline for AM-1 & PM Era baseline.
      - Collaborate with baseline in PM-era to incorporate technology advances.
- **Recertify and reconfirm baseline players - deliver V1/V2**
  - **Recertify DAACs**
  - **Build and operate AM & PM system with Hughes & DAACs**
  - **Ensure PM-era collaboration with WP-ESIPs capable in that time frame**
- **Aggressively pursue cost efficiencies enabling federation flexibility**
  - **Invest in development of new technologies & innovative approaches that will drive down long-term costs via WP-ESIPs**
    - Opportunities for insertion: PM-era, V0 legacy sites, Chem-era competition
  - **Aggressively pursue transfer of data sets and routine operations to Long Term Archives**

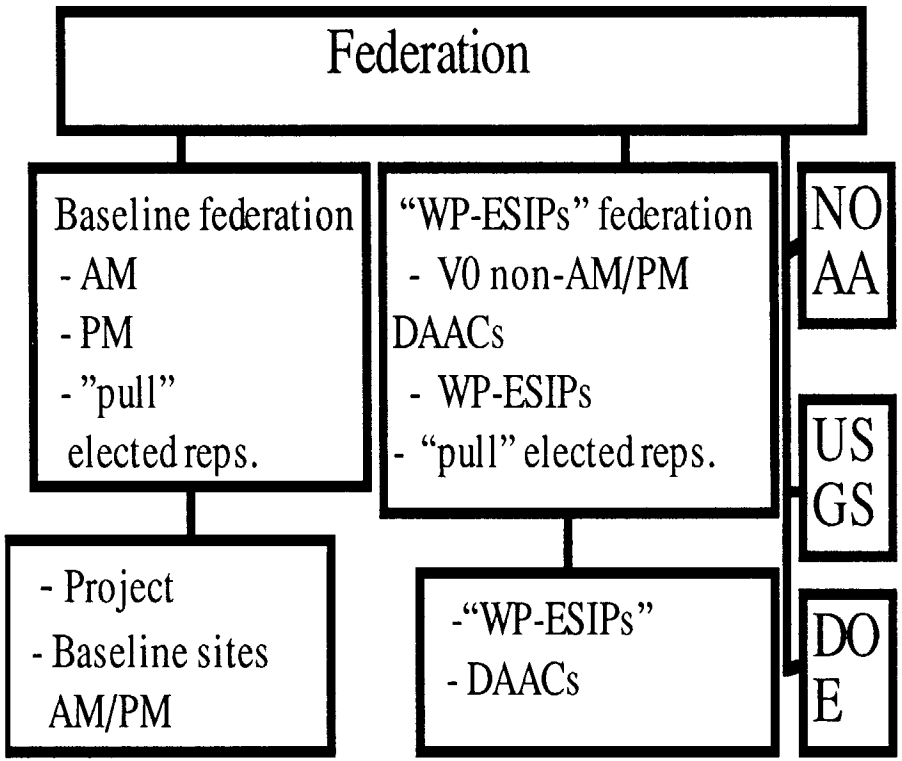
WP-ESIP Characteristics



- **Winning WP-ESIPs will have all aspects:**
  - provide real services to real users
  - have "new" products to make available
  - use innovative technologies or approaches
  - be able to support evolution of System Wide Interface Layer
- **Funding sources will be melded to support multiple themes:**
  - Numbers of WP-ESIPs estimate: 4 + TBD Type 2s, Type 3: 5-15 extensions
    - Themes: extensions, technology development, science product availability
    - Optional additional theme: algorithm development (depends on Code YS funding)
- **"WP-ESIPs" Interface Layer**
  - Initial selection from available options
  - Level of effort to "federate" with other WP-ESIPs
  - Translation via gateways permits evolution

Governance Approach

Federation governance prototype



- **Adopt "federation of federations" concept**
  - Allows focus on needs of ESIP Types
- **Immediately form two working federation councils to "learn by doing" in prototype**
- **Allow Type 1 "rigor" and Type 2/3 "flexible" federation groups to evolve separately during phase I**
  - "Baseline" Proceeds as planned for AM-Era
  - Type 2/3 "working prototype" self-define governance approaches using NRC Forum results as initial guide
- **Type 2/3 integration in hands of membership**
  - Integrating Organization initially "virtual organization" in Phase I made up of Level of Effort ESIP work
  - After Phase I - reassess - Integrating Organization could be organization (virtual or actual), process, or technologies
- **Reassess approach for Phase II**

Phase II: Operational Federation Actions

- **Assess "state of the federation" to refine Phase II approach**
  - Assess funding availability, science needs, technology directions, governance approaches
  - Decision to continue of modify governance approach
  - NASA in consultation with user community & advisory bodies establishes the basis for Phase II competition (standards/system wide interface layer)
- **Competition for Chem-Era System Build and Operation**
  - Selection '99
  - WP-ESIPs 2 years into 3 year effort
  - Incorporate Phase I technology investments
  - Apply funds found via Phase I cost efficiencies to support federation flexibility
  - Open up to international participation
- **Compete next set of WP-ESIPs to "seed" for subsequent mission eras**
- **Continue active movement of data to Long Term Archives to reduce cost & NASA routine operations**
- **Continue future competitions based on "mission-eras"**

Next Steps

- Management endorsement, community acceptance of approach.
- Confirm source of funds to determine scope of WP-ESIP CAN.
- NASA internal management roles and responsibilities definition, with transition approach.
- Work with community to set expectations for NRC Forum on Federation Governance.
- Begin drafting CAN (develop via iterative refinement).
- Scenario costing to develop target budget (NOAA costs and savings, International participation in Chem-Era system, numbers of operational sites estimated to be sustainable, GCDIS outreach reserve estimated, target cost reductions, etc.)